IN THE CLAIMS

Please amend the claims as indicated below.

1. (currently amended) A semiconductor device, comprising:

a MOSFET; and

an on-chip magnetic resistive element proximate the MOSFET, the magnetic resistive element containing a first conductive layer proximate the source of the MOSFET and a second conductive layer proximate the first conductive layer.

2. (original) The device of claim 1, wherein the magnetic resistive element senses the current flowing through the MOSFET.

3. (canceled)

4. (original) The device of claim 3, wherein the first conductive layer is insulated from the source of the MOSFET by an insulating layer.

5. (original) The device of claim 4, wherein the first conductive layer is connected to terminals via leads.

6. (canceled)

7. (currently amended) The device of ~~claim 3~~ claim 1, wherein the first conductive layer is provided with an initial direction of magnetization.

8. (original) An on-chip current sensor for a current-carrying component of a semiconductor device, the sensor comprising a magnetic resistive element proximate a portion of the current-carrying component.

9. (original) The sensor of claim 8, wherein the magnetic resistive element comprises a first conductive layer that is proximate the portion of the current-carrying component.

10. (original) The sensor of claim 9, wherein the first conductive layer is insulated from the current-carrying component.

11. (original) The sensor of claim 10, wherein the first conductive layer is connected to terminals via leads.

12. (original) The sensor of claim 9, wherein the magnetic resistive element contains a second conductive layer proximate the first conductive layer.

13. (original) The sensor of claim 9, wherein the first conductive layer is provided with an initial direction of magnetization.

14. (original) A semiconductor device, comprising:

a MOSFET; and

an on-chip magnetic resistive element located proximate the MOSFET that senses the current flowing through the MOSFET.

15. (original) The device of claim 14, wherein the magnetic resistive element comprises a first conductive layer proximate to the MOSFET and insulated from the MOSFET by an insulating layer.

16. (original) The device of claim 15, wherein the magnetic resistive element contains a second conductive layer proximate the first conductive layer.

17. (original) The device of claim 15, wherein the first conductive layer is provided with an initial direction of magnetization.

18. (original) An electronic apparatus comprising a semiconductor device, the semiconductor device containing:

a MOSFET; and

an on-chip magnetic resistive element located proximate the MOSFET that senses the current flowing through the MOSFET.

19. (currently amended) A method for making a semiconductor device, comprising:

providing a MOSFET; and

providing an on-chip magnetic resistive element proximate the MOSFET, the magnetic resistive element containing a first conductive layer proximate the source of the MOSFET and a second conductive layer proximate the first conductive layer.

20. (currently amended) A method for making a semiconductor device, comprising:

forming a MOSFET structure; and

providing an on-chip magnetic resistive element proximate the MOSFET that senses the current flowing through the MOSFET ~~by:~~

~~forming an insulating layer on a portion of the MOSFET structure; and~~

~~forming a first conductive layer on a portion of the insulating layer.~~

21. (currently amended) The method of claim 20, further comprising forming the magnetic resistive element by forming an insulating layer on a portion of the MOSFET structure and forming a first conductive layer on a portion of the insulating layer ~~forming a second conductive layer on the first conductive layer.~~

22. (currently amended) The method of ~~claim 20~~ claim 21, including forming ~~the magnetic resistive element proximate the MOSFET structure~~ a second conductive layer proximate the first conductive layer.

23. (currently amended) The method of ~~claim 20~~ claim 21, including providing the magnetic resistive element with terminals connected to the first conductive layer by leads.

24. (canceled)

25. (original) A method for sensing a current in a semiconductor device, the method comprising:

providing a semiconductor device containing a current-carrying component;

providing an on-chip current sensor containing a magnetic resistive element with an initial direction of magnetization; and

measuring the resistance in the magnetic resistive element as the current flows through the current-carrying component.

26. (original) The method of claim 25, wherein the resistance changes due to the magnetic field generated by the flowing current.

27. (new) An electronic apparatus containing an on-chip current sensor for a current-carrying component of a semiconductor device, the sensor comprising a magnetic resistive element proximate a portion of the current-carrying component.

28. (new) An electronic apparatus containing a semiconductor device, the semiconductor device comprising:

a MOSFET; and

an on-chip magnetic resistive element proximate the MOSFET, the magnetic resistive element containing a first conductive layer and a second conductive layer proximate the first conductive layer.

29. (new) The semiconductor device of claim 1, wherein the magnetic resistive element can measure both AC and DC currents up to high frequencies ranging from about DC to about several hundred KHz.

30. (new) The semiconductor device of claim 7, wherein the magnetic resistive element changes it resistance based on the magnetic field generated by the current flowing through the MOSFET.

31. (new) The semiconductor device of claims 1, wherein the second conductive layer contains a material with a higher electrical conductivity than the material of the first conductive layer.

32. (new) The semiconductor device of claim 14, wherein the magnetic resistive element can measure both AC and DC currents up to high frequencies ranging from about DC to about several hundred KHz.

33. (new) The semiconductor device of claim 14, wherein the magnetic resistive element changes it resistance based on the magnetic field generated by the current flowing through the MOSFET.

34. (new) The semiconductor device of claim 16, wherein the second conductive layer contains a material with a higher electrical conductivity than the material of the first conductive layer.